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PLUG AND ABANDONMENT PROCEDURE
FRED MAYER 6-15, API 05-123-17928

Steps

1. Provide 48 hour notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Call foreman/field coordinator at least 24 hours prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
2. MIRU slickline services and pressure bomb services. Pull bumper spring, tag bottom, and run pressure bomb survey and obtain pressure gradient survey from surface to 7097' making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RDMO slickline and pressure bomb services.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. MIRU, kill as necessary using clean fresh water with biocide. NDWH, NUBOP. Unseat landing jt, LD.
5. Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL.
6. Notify cementers to be on call. Provide volumes listed below:

6.1 Niobrara plug: 25 sx (35 cu-ft) "G" w/silica flour, 0.4% CD-32, 0.4 ASA-301 and R-3 to achieve 2:30 pump time. Mix at 15.8 ppg and 1.38 cu-ft/sk. Cement volume based on 400' in 4 ½" casing.

6.2 Sussex suicide: 460 sx (529 cu-ft) "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301, mixed at 15.8 ppg and 1.15 cu-ft/sk. Cement volume based on 860' in a 10" OH annulus with 20% and 1020' in 4 ½" production casing. Caliper on file.

6.3 Foxhills plug: 220 sx (293 cu-ft) Type III w/cello flake and $CaCl_2$ as necessary, mixed at 14.8 ppg and 1.33 cu-ft/sk. Cement volume based on 100' in 9" OH annulus with 20% excess, 320' in 9" OH with 20% excess and 200' in 8 5/8" casing. Caliper on file.

7. TOOH 226 joints of 2 3/8" tubing landed at 7060'. Stand back tubing.
8. MIRU WL. PU 4 ½" 11.6# gauge ring and RIH to 6840'. POOH.
9. PU 4 ½" 11.6# CIBP, RIH and set at +/-6810' to abandon Codell and Niobrara perfs. PT to 1000 psi. RD wireline.
10. RIH with 2 3/8" production tubing to +/- 6810'. Tag CIBP and PUH 5'. Hydrotest tubing to 3000 psi while RIH.
11. RU cementers. Pump Niobrara plug: 25 sx (35 cu-ft) "G" w/silica flour, 0.4% CD-32, 0.4 ASA-301 and R-3 to achieve 2:30 pump time. Mix at 15.8 ppg and 1.38 cu-ft/sk. Plug to cover 6810'-6410'.
12. PUH to ~6000'. Circulate with water containing biocide to displace cement and clear tubing.
13. P&SB 3950', LD remainder.
14. PU two 3 1/8" perf guns with 3 spf, 120 degree phasing, and 0.59" EHD. Shoot 1' of squeeze perfs at 4780' and 3920'.

15. PU CIRC and RIH on 2 3/8" tubing, set at ~3950' per CCL. Establish circulation with fresh water containing biocide.
16. RU cementers. Precede cement with 5 bbl water w/biocide, 20 bbl sodium metasilicate, and another 5 bbl water spacer.
17. Pump Sussex suicide: 460 sx (529 cu-ft) "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301, mixed at 15.8 ppg and 1.15 cu-ft/sk to place cement between perfs from 4780' to 3920'. Under displace and sting out of CICR to leave 3 bbls on top of retainer. Plug to cover from 4780' to 3920' in a 10" OH annulus with 20 % excess and from 4780' to 3760' in 4 ½" casing. RD cementers.
18. PUH to ~3300'. Circulate with water containing biocide to displace cement and clear tubing.
19. P&SB 1050' of tubing, LD remainder.
20. RU WL. Shoot off casing at or below 950'. RD WL.
21. Circulate casing with water containing biocide to remove any excess gas.
22. NDBOP, NDTH. Install BOP on casing head with 4 ½" pipe rams.
23. TOOH 4 ½" casing, LD. Replace 2 3/8" pipe rams.
24. RIH with 2 3/8" tubing to +/- 1050'.
25. RU cementers. Precede cement with 10 bbl SAPP and a 20 bbl (minimum) fresh water spacer.
26. Pump Foxhills plug: 220 sx (293 cu-ft) Type III w/cello flake and $CaCl_2$ as necessary, mixed at 14.8 ppg and 1.33 cu-ft/sk. RD cementers. Plug to cover from 1050'-950' in a 9" OH annulus with 20% excess, 950'-620' in 9" OH with 20% excess, and 620'-420' in 8 5/8" casing. Caliper on file. l
27. PUH to 100'. Circulate with water containing biocide to displace cement and clear tubing.
28. TOOH and WOC per cement company recommendations.
29. Tag cement at or above 420'. If not, consult with Evans Engineering.
30. RU WL. PU 8 5/8" 24# CIBP and RIH to 80'. Set and PT to 1000 psi for 15 minutes. If tests, RDMO WL and WO rig.
31. Instruct cementing and wireline contractors to email copies of all job logs/jobs summaries to rscDJVendors@anadarko.com within 24 hours of completion of the job.
32. Supervisor is to submit paper copies of all invoices, logs, and reports to Joleen Kramer.
33. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
34. Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
35. Welder cut casing minimum 5' below ground level.
36. Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
37. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
38. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
39. Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
40. Back fill hole with fill. Clean location, level.